

### **STATUS OF CLAIMS**

Claim 1 has been rejected.

Claims 2 and 3 have been canceled.

Claims 4 through 11 have been rejected.

Claim 12 has been canceled.

Claims 13 through 20 have been rejected.

Claims 1, 4 through 11, and 13 through 20 are being appealed.

### **STATUS OF AMENDMENTS**

An Amendment Under 37 C.F.R. 1.116 was filed on June 25, 2003 in response to the Final Office Action dated March 25, 2003. An Advisory Action dated July 17, 2003 indicated that the Amendment under 37 C.F.R. 1.116 had been considered, but would not place the application in a condition for allowance. The Advisory Action does not indicate that, upon the filing of an appeal, the Amendment under 37 C.F.R. 1.116 would be entered. A Notice of Appeal, along with the requisite fee, was filed on June 25, 2003. The Appeal Brief, along with the requisite fee, is submitted herewith.

### **SUMMARY OF INVENTION**

The present invention is a thermally energy efficient vehicle 10 including a vehicle structure 12 that is the frame of the vehicle 10. The vehicle structure 12 also includes a vehicle body 14 which defines the shape of the vehicle 10 and includes structural members 16 typically associated with the vehicle body 14. The vehicle body 14 includes a plurality of generally planar interconnected body panels 28 secured thereto the frame that define an aesthetically pleasing

shape of the thermally energy efficient vehicle 10. The vehicle structure 12 is divided into sections, such as a front storage compartment 30, an occupant compartment 32, and a rear storage compartment 34. The front storage compartment 30, referred to as an engine compartment, houses the mechanisms for operating the vehicle 10, such as the powertrain. The occupant compartment 32 provides a shelter for a vehicle occupant, and includes seats, control mechanisms for operating the vehicle, and control mechanisms for maintaining the comfort of the occupant compartment. The vehicle structure 12 includes the use of a thermally efficient structural material 36 in a portion thereof.

The vehicle structure 12 also includes a window 40, such as a windshield 42, a side window 44 or a rear window 46. The thermally energy efficient vehicle 10 utilizes a low transmittance glass 48 for the window portions of the thermally energy efficient vehicle 10. Preferably, the low transmittance glass 48 is a dual pane glass consisting of two parallel sheets of glass 50 separated by an air gap 52. Preferably, the low transmittance glass 48 includes a solar reflective film 54 secured to a surface of the glass sheet 50. The film 54 reduces the load on a climate control system by reducing the solar radiation into the occupant compartment. The low transmittance glass 48 may also include a desiccant material 56 positioned in the air gap 52 between the glass sheets 50 to trap water vapor.

The thermally energy efficient vehicle 10 also includes an energy efficient insulator 58 to insulate the vehicle 10 from dynamic thermal energy transmission. Advantageously, the energy efficient insulator 58 is thermally efficient and also provides an acoustic barrier. Preferably, the energy efficient insulator 58 is a lightweight gas filled panel or bag. The energy efficient insulator 58 is attached to an inside portion of the vehicle structure 12, such as by an adhesive. Advantageously, the energy efficient insulator 58 improves the thermal

resistance of the thermally energy efficient vehicle 10, resulting in higher outside surface temperatures.

The thermally energy efficient vehicle 10 includes a power train 70, such as a heat engine 72, operating on a hydrocarbon-based or fossil fuel, although other vehicle types are contemplated. The power from the engine 72 is used to operate the thermal energy management system. The engine 72 is also operatively connected to a transmission to transmit engine rotation and power to a drive wheel.

The thermally energy efficient vehicle 10 includes an energy efficient thermal management system 80. The thermal management system 80 generally provides both exterior thermal management and interior thermal management for the vehicle. Exterior thermal management provides powertrain cooling within the front storage compartment 30. Interior thermal management provides for heating, ventilation and air conditioning of an occupant compartment 32 portion of the thermally energy efficient vehicle 10, and is referred to as climate control.

The energy efficient thermal management system 80 includes a fan 82 positioned behind a front grill (not shown) portion of the thermally energy efficient vehicle 10. The fan draws air 84 from outside the vehicle 10 into the front storage compartment 30 to provide cooling of powertrain components, such as the engine 72. The thermal management system 80 further includes a radiator positioned behind the front grill. The radiator provides powertrain cooling by the rejection of waste heat from the engine 72 through a coolant fluid.

The thermal management system 80 also includes an airflow handling system, referred to in the art as a heating, ventilation and air conditioning (HVAC) air-handling assembly 98, for providing climate control within the occupant compartment 32. The HVAC air-handling

assembly 98 conditions a flow of air by heating or cooling the airflow and distributing the flow of conditioned air to the interior of the occupant compartment 32 of the thermally energy efficient vehicle 10.

### **ISSUES**

The issues in this Appeal are statutorily formulated in 35 U.S.C. § 103. Specifically, one issue is whether the claimed invention of claims 1, 4, 5, and 10 are obvious and unpatentable under 35 U.S.C. § 103 over Cobes et al. (U.S. Patent No. 5,480,208) in view of Li (U.S. Patent No. 5,865,940) and Farmer et al. (U.S. Patent No. 4,973,511). Another issue is whether the claimed invention of claims 6 through 9, 11, and 13 through 20 are obvious and unpatentable under 35 U.S.C. § 103 over Cobes et al. (U.S. Patent No. 5,480,208) in view of Li (U.S. Patent No. 5,865,940) and Farmer et al. (U.S. Patent No. 4,973,511) and further in view Lisec (U.S. Patent No. 5,173,148).

### **GROUPINGS OF CLAIMS**

Claims 1, 4, 5, and 10 stand or fall together in regard to the rejection under 35 U.S.C. § 103.

Claims 6 through 9, 11, and 13 through 20 stand or fall together in regard to the rejection under 35 U.S.C. § 103.